

## State Implementation Plan Development

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Dallas-Fort Worth Air Quality Public Information Meeting September 5, 2013



## **Topics**

 State Implementation Plan (SIP) Elements and Timeline

- Photochemical Modeling Status
- Updates/Revisions



### **Background**

- The 2008 Eight-Hour Ozone Standard is attained when the ozone design value is 75 parts per billion or less
- Effective July 20, 2012 EPA designated the 10-county DFW area as nonattainment for the 2008 eight-hour ozone standard:
  - Consists of Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties
  - Classified as moderate with an attainment deadline of December 31, 2018



### **SIP Elements and Timeline**



# Elements of the Attainment Demonstration

- Demonstration that the state's plan for the area will result in its attainment of the 2008 eight-hour ozone standard by December 31, 2018
- Photochemical modeling
  - Conceptual model
  - Emissions inventories
  - Modeling (base case, baseline, future baseline)
  - Attainment test
  - Corroborative analysis/weight of evidence



## Elements of the Attainment Demonstration

- Control strategies:
  - Reasonably Available Control Technology (RACT)
  - Reasonably Available Control Measures (RACM)
  - Other measures necessary to attain
  - New contingency measures
- Reasonable Further Progress (RFP) analysis



#### **Elements of the RFP Demonstration**

- Demonstration that the state's plan will reduce NO<sub>X</sub> and/or VOC emissions from base year through attainment year:
- Base-year inventory: 2011
- Must demonstrate 15% reduction of  $NO_X$  and/or VOC emissions between 2011 and 2017
  - VOC only for Wise County
- Must demonstrate an additional reduction of NO<sub>X</sub> and/or VOC emissions from 2017-2018
- Contingency measures



#### **SIP Timeline**

- Initial future design value by November 2013
- Preliminary RFP values by March 2014
- RACT evaluation complete by Spring 2014
- Initial control measure stakeholder input by Summer 2014
- Proposal agenda for RACT, RFP, and Attainment Demonstration SIP revision and rules: December 2014
- Anticipated public comment period –
   December 2014 January 2015
- Adoption agenda: May/June 2015



## **Photochemical Modeling Status**

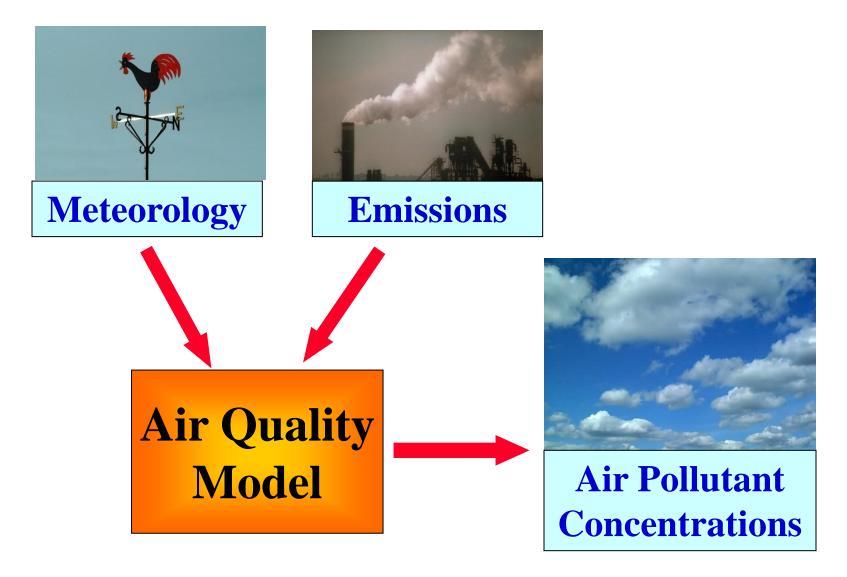


### **Modeling Overview**

- Computer Simulation
  - Estimate pollutant concentrations in places without monitors
- Estimate the amount of emission reductions needed to attain the ozone standard
  - Model outcomes of scenarios to study effectiveness of plans and control measures
  - Demonstrate that the area will achieve the standard by the attainment date

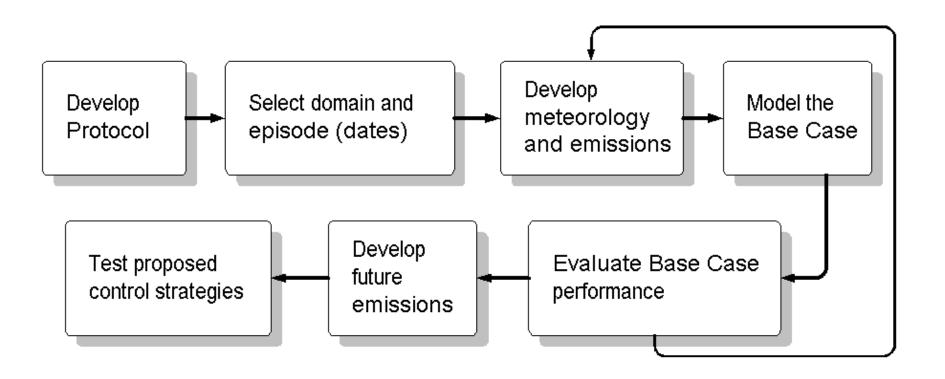


### The Big Picture





### **Modeling Procedures**





## Comparing Ozone Modeling for Previous DFW SIP to Currently Proposed Work

#### Base case episodes:

- Continue to use June 2006 episode (May 31 July 2) with improvements
- Add an August/September 2006 episode
   (August 13 September 15) with latest inputs

#### • Modeling domain:

- Previous SIP domain covered two-thirds of eastern U.S. with a fine grid over the DFW area
- Newer domain covers most of North America with a large fine grid over eastern Texas



## Comparing Ozone Modeling for Previous DFW SIP to Currently Proposed Work

#### Meteorological model:

- Previous SIP relied on the Fifth Generation Mesoscale Model (MM5, <a href="http://www.mmm.ucar.edu/mm5/">http://www.mmm.ucar.edu/mm5/</a>)
- Newer work is being done with the Weather and Research Forecasting (WRF, <a href="http://www.wrf-model.org/index.php">http://www.wrf-model.org/index.php</a>) model

#### Photochemical model:

- Previous SIP relied on the Comprehensive Air Quality Model with Extensions (CAM<sub>X</sub>, <a href="http://camx.com/">http://camx.com/</a>)
   version 5.20.1
- $CAM_X$  version 6.00 released on May 6, 2013, and either it or future updates will be used



## Comparing Ozone Modeling for Previous DFW SIP to Currently Proposed Work

### Speciation mechanism:

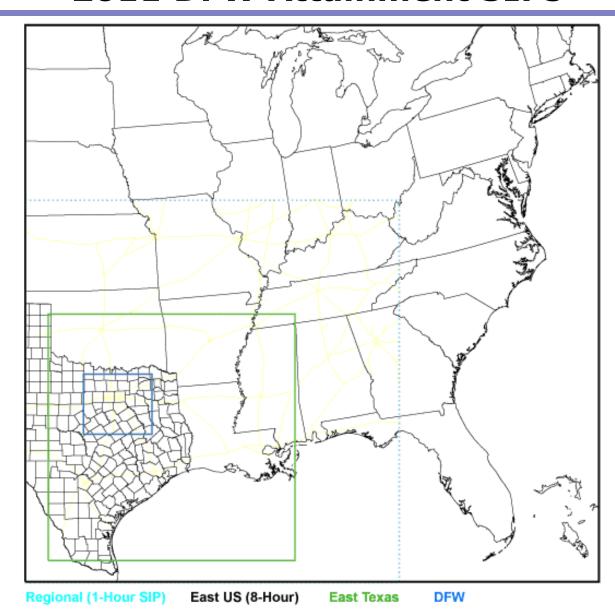
- Previous SIP relied on the Carbon Bond 05 (CB-05) speciation mechanism
- Current work is being done with the Carbon Bond
   6 (CB6) mechanism

#### Emissions inventory:

 Latest available inputs for on-road, non-road, offroad, oil and gas, area, point



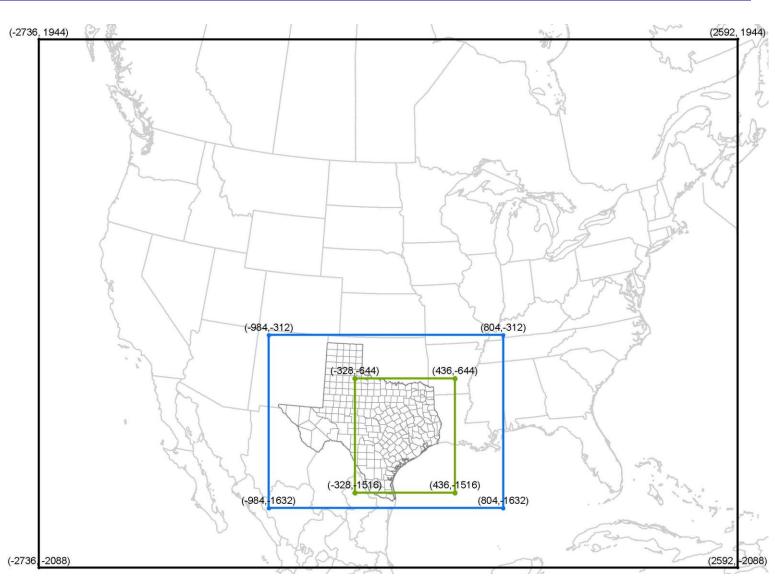
## Ozone Modeling Domain for 2007 and 2011 DFW Attainment SIPs





## North American Regional Planning Organizations (RPO) Domains for Texas Air Quality Modeling Efforts

Domain Name	Grid Cells
tx_4km	16,576
tx_12km	6,580
rpo_36km	41,638





## **Updates/Revisions**



# Area Source Condensate Tank VOC Emissions Factors

- TCEQ contracted Eastern Research Group,
   Inc. to develop new factors for eight areas in Texas
- 2011 area source condensate tank VOC emissions were reduced by 75% (600,940 tons of VOC)
- Previous factor was developed in 2006 using a limited data set
- Current factor is based on more recent data and a larger data set



# **Area Source Condensate Tank VOC Emissions Factors**

#### New factor accounts for reductions from:

- Effects of new rules and permitting requirements
- Industry outreach
- Improved guidance for determining condensate storage tank emissions
- Production weighting of data to develop emissions factors



## **DFW Control Strategy Planning**

Reasonably Available Control Technology (RACT) and Reasonably Available Control Measures (RACM)

- FCAA §172(c)(1) requires states to implement all RACM as expeditiously as practicable
- FCAA also requires states to implement RACT for certain named source categories and major sources from unnamed categories
- RACT for the DFW area must be implemented by January 1, 2017



## **DFW Control Strategy Planning**

To be considered RACM a potential control measure must meet the following criteria:

- technologically feasible;
- economically feasible;
- does not cause adverse impacts;
- enforceable and practicable;
- ozone reduction benefit; and
- reduce emissions before the beginning of the ozone season prior to the attainment date (March 1, 2018)



# Previously Implemented Measures for Stationary Sources

### NO<sub>x</sub> rule amendments

- Cement kilns (2007)
- Electric generating units in DFW (2007)
- Gas-fired engines (2005)
- Major stationary sources >= 50 tpy (2007) including:
  - boilers, engines, and turbines;
  - lime, brick, and ceramic kilns;
  - industrial furnaces and ovens; and
  - industrial dryers
- Minor stationary source engines < 50 tpy (2007)</li>
- Rich burn engines in East TX (2007)



# Previously Implemented Measures for Stationary Sources

#### VOC rule amendments

- Cleaning solvents (2011)
- Cutback asphalt (2006)
- Degreasing (2006)
- Gasoline terminals (2006)
- Petroleum dry cleaning (2010)
- Storage tanks (2006, 2011)
- Surface coating (2005, 2010, 2011)
- Tank degassing (2010)
- Vent gas (2006)



# Previously Implemented Measures for Mobile/Area Sources

- Vehicle Idling Restrictions
- Vehicle Inspection/Maintenance
- Texas Low Emission Diesel
- Texas Emission Reduction Plan
- Reformulated Gasoline



# Previously Implemented Measures for Mobile/Area Sources

- Transportation Control Measures
- Heavy-Duty Diesel Engine Standards
- Large Non-Road Spark Ignition Standards
- Voluntary Mobile Emission Reductions
- Stage I Vapor Recovery



## **DFW Control Strategy Planning**

#### Requesting potential strategies:

- Suggestions for new control strategies
- Modifications of existing control strategies
- Stationary source or mobile source ideas

#### When submitting comments:

- Describe technical and economic feasibility
- Provide as much detail and technical information as possible
- Provide a copy, Web link, or citation for suggested rules
- Identify any confidential information
- Explain feasibility information provided on a dollar per ton basis.



## **DFW Control Strategy Planning**

Please send comments by postal mail or e-mail to:

Chance Goodin – Stationary source ideas <a href="mailto:chance.goodin@tceq.texas.gov">chance.goodin@tceq.texas.gov</a>

Amy Muttoni – Mobile source ideas <a href="mailto:amy.muttoni@tceq.texas.gov">amy.muttoni@tceq.texas.gov</a>

Texas Commission on Environmental Quality 12100 Park 35 Circle, Mail Code MC-206 Austin, Texas 78753



## **Wise County**

- Extension of applicable stationary source rules necessary to satisfy RACT
  - Rules applicable in the other nine DFW counties

- Especially:

Storage tanks Engines

VOC fugitives Electric generating units

Vent gas Major NOX sources

- RFP Reductions
  - Different from other 9 counties
  - 15% reduction from VOC only
- No Inspection/Maintenance requirement



#### **Email Notifications**

To receive e-mail notification of updates on SIP revisions and SIP-related news items:

- Go to TCEQ's Web site at: http://www.tceq.texas.gov
- Choose "Sign up for e-mail updates"
- From the list of choices, look under Air Quality and select "SIP Hot Topics"



### **Contact Information**

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